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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,185	01/03/2002	Yong Min Ha	041501-5479	7731

9629 7590 05/02/2005

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EXAMINER	
SAID, MANSOUR M	

ART UNIT	PAPER NUMBER
2673	

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/034,185	HA, YONG MIN	
	Examiner	Art Unit	
	MANSOUR M SAID	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5 and 6* is/are rejected.

7)☒ Claim(s) *4 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/5/05 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Prior Art (hereinafter referred to as APA) in view of Sekine (6,661,401 B1).

As to claim 1, APA teaches a data driving circuit of an LCD device (LCD display, (figure 1, (1)) comprising a timing controller (timing controller, (figure 1, (3)) for formatting input data (display data) so that data and gate drivers (gate driver, (figure 1, (1a)) of an LCD panel display a picture image (LCD display, (figure 1, (1)), and outputting a selection signal (specification page 2, lines 15-21 and page 3, lines 1-16); a digital to analog converters (DA, (figure 1, (5)) for converting digital signals output from the timing controller (timing controller,

(figure 1, (3)) to analog signals based on a color gray level displayed (specification page 3, lines 1-12) and receiving the selection signal (specification page 3, lines 1-12).

APA dose not expressly disclose timing controller selects a plurality of digital to analog converters wherein the selection signal is to select an appropriate converter of the plurality of digital to analog converters to be driven.

However, Sekine teaches timing controller (figures 1 & 5, (30)) selects a plurality of digital to analog converters (figures 1 & 5, (16R, 16G & 16B) wherein the selection signal is to select an appropriate converter of the plurality of digital to analog converters to be driven (column 3, lines 39-50, column 6, lines 3-18 and column 8, lines 10-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Sekine's device having time controller selects between plurality digital to analog (D/A) into APA's display device so as to generate a video signal to be supplied to the liquid crystal display, includes, for each of liquid crystal display systems for R (red), G (green) and B (blue) (column 3, lines 39-46).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sekine as applied to claim 1 above, and further in view of Kwon (6,577,293 B1).

APA and Sekine teach all **claim 2** except a plurality of multiplexes for selecting a signal output.

However, Kwon teaches a plurality of multiplexes (MUXs, (figure 10B, (80)) for selecting a signal output (column6, lines 58-67 and column 7, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Kwon's LCD display having a plurality multiplexes into APA's modified device so that the external control signal to output the selected one to the pixels (column 7, lines 1-11).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sekine as applied to claim 1 above, and further in view of Mitani et al. (5,714,953; hereinafter referred to as Mitani B1).

As to claim 3, APA and Sekine teach all claimed limitation except that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image.

However, Mitani teaches that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image (figures 2-10; abstract, column 5, lines 33, column 7, lines 4-15; column 7, lines 25-67; column 9, lines 40-65, and column 16, line 54 through column 17, line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Mitani's teaching into APA's modified system so as to provide a composite D/A converter capable of effecting the D/A conversion with high precision in a relatively small pattern occupancy area even when the number of conversion bits is large (column 4, lines 63-67).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Prior Art (hereinafter referred to as APA) in view of Sekine (6,661,401 B1), further in view of Kwon.

As to claim 5, APA teaches a data driving circuit of an LCD device (LCD display, (figure 1, (1)) comprising a timing controller (timing controller, (figure 1, (3)) for formatting input data (display data) so that data and gate drivers (gate driver, (figure 1, (1a)) of an LCD panel display a picture image (LCD display, (figure 1, (1)), and outputting a selection signal (specification page 2, lines 15-21 and page 3, lines 1-16); a level shifter (level shifter, (figure 1, (4)) for amplifying voltage levels of signals output from the timing controller (timing controller, (figure 1, (3)) (specification page 3, lines 1-16); a digital to analog converters (DA, (figure 1, (5)) for converting digital signals output from the timing controller (timing controller, (figure 1, (3)) to analog signals based on a color gray level displayed (specification page 3, lines 1-16) and receiving the selection signal (specification page 3, lines 1-12).

APA dose not expressly disclose timing controller selects a plurality of digital to analog converters wherein the selection signal is to select an appropriate converter of the plurality of digital to analog converters to be driven.

However, Sekine teaches timing controller (figures 1 & 5, (30)) selects a plurality of digital to analog converters (figures 1 & 5, (16R, 16G & 16B) wherein the selection signal is to select an appropriate converter of the plurality of digital to analog converters to be driven (column 3, lines 39-50, column 6, lines 3-18 and column 8, lines 10-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Sekine's device having time controller selects between

plurality digital to analog (D/A) into APA's display device so as to generate a video signal to be supplied to the liquid crystal display, includes, for each of liquid crystal display systems for R (red), G (green) and B (blue) (column 3, lines 39-46).

APA and Sekine do not teach expressly disclose a plurality of multiplexes for selecting a signal output.

However, Kwon teaches a plurality of multiplexes (MUXs, (figure 10B, (80)) for selecting a signal output (column6, lines 58-67 and column 7, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Kwon's LCD display having a plurality multiplexes into APA's modified device so that the external control signal to output the selected one to the pixels (column 7, lines 1-11).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA, Sekine in view of Kwon as applied to claim 5 above, and further in view of Mitani et al. (5,714,953; hereinafter referred to as Mitani B1).

As to claims 6, APA, Sekine and Kwon teach all claimed limitation except that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image.

However, Mitani teaches that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image (figures 2-10; abstract, column 5, lines 33, column 7, lines 4-15; column 7, lines 25-67; column 9, lines 40-65, and column 16, line 54 through column 17, line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Mitani's teaching into APA's modified system so as to provide a composite D/A converter capable of effecting the D/A conversion with high precision in a relatively small pattern occupancy area even when the number of conversion bits is large (column 4, lines 63-67).

Allowable Subject Matter

8. Claims 4 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: a first digital to analog converter, a second digital to analog converter and a third digital to analog converter, the first digital to analog converter serving to obtain a multigray (64 gray or 6 bit) image, the second digital to analog converter serving to obtain an intermediate gray (16 gray or 4 bit) image, and the third digital to analog converter serving to obtain a low gray (2 gray or 1 bit) image.

Response to Arguments

9. Applicant's arguments filed on 1/5/05 have been fully considered but they are not persuasive. On page 6, Applicant argued that "the applied art, whether taken singly or combined, does not teach or suggest a combination including at least a timing controller outpu6ting a selection signal and a plurality of digital to analog converter".

Examiner agreed that neither APA nor Sagawa do not specifically shows the amended claimed limitations such as time controller that selects between pluralities of digital to analog converter.

However, the new cited reference Sekine (6,661,401) fairly teaches time controller (figures 1 & 5, (30)) and a plurality of DAD (figures 1 & 5, (16R, 16G & 16B)) wherein the time controller (30) selects between the pluralities of DACs (column 3, lines 39-50, column 6, lines 3-18 and column 8, lines 10-30).

On page 6, Applicant argued, "the Office Action does not rely On Sagawa et al., Kwon, and/or Mitani et al. to remedy the deficiencies o Applicant's disclosed Related Art.

However, Examiner respectfully disagrees for the following reason, for instance, the new cited reference (Sekine) fairly over come the amended limitations such as time controller that selects between plurality of digital to analog converter. Therefore, the combination of all references fairly discloses the claimed limitation, and all references should be taken in combination and into individually. The Applicant cannot show non-obviousness by attacking references individually where, as here the rejections are based on combination of references. **In re Keller, 208 USPQ 871 (CCPA 1981).**

Conclusion

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Mansour M. Said** whose telephone number is **(571) 272-7679.**

The examiner can normally be reached on Monday through Thursday from 8:30 a.m. to 6:00 p.m. The examiner can also be reached on alternate Friday from 8:30 a.m. to 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Shalwala Bipin**, can be reached at **(571) 272-7681**.

11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Mansour M. Said** whose telephone number is **(571) 272-7679**.

The examiner can normally be reached on Monday through Thursday from 8:30 a.m. to 6:00 p.m. The examiner can also be reached on alternate Friday from 8:30 a.m. to 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Shalwala Bipin**, can be reached at **(571) 272-7681**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 22, 2005

Mansour M. Said

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